

**CLAIMS****WHAT IS CLAIMED IS:**

5           1.    Compositions comprising ethylene oxide and a  
flammability suppressant consisting of a blend of  
trifluoromethyl iodide and carbon dioxide.

          2.    The compositions of claim 1, further comprising a  
10   blend pressure of below approximately 45 psig.

          3.    The compositions of claim 1, wherein the  
concentration of ethylene oxide comprises between  
approximately 250 mg/L and approximately 800 mg/L.

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          4.    The compositions of claim 1, further comprising from  
about 9% to about 30% by gas volume ethylene oxide and from  
about 91% to about 70% by gas volume of said at least one  
flammability suppressant, wherein said at least one  
20   flammability suppressant comprises trifluoromethyl iodide and  
carbon dioxide.

5. The compositions of claim 4, wherein said ethylene oxide comprises between about 10% to about 25% by gas volume.

6. The compositions of claim 5, wherein said carbon dioxide comprises between about 60% to about 90% by gas volume and said trifluoromethyl iodide comprises between about 0.1% to about 20% by gas volume.

7. The compositions of claim 5, wherein said carbon dioxide comprises between about 70% to about 80% by gas volume and said trifluoromethyl iodide comprises between about 0.5% to about 8% by gas volume.

8. The compositions of claim 1, further comprising at least one inert propellant.

9. The compositions of claim 8, wherein said at least one inert propellant is selected from the group consisting of nitrogen, argon, air, and hydrofluorocarbons.

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10. The compositions of claim 8, wherein said at least one inert propellant is nitrogen.

11. The compositions of claim 9, wherein said hydrofluorocarbons are selected from the group consisting of trifluoromethane, pentafluoroethane, 1,1,1,2-tetrafluoroethane, 1,1,1,3,3-pentafluoropropane, and 2H-  
5 heptafluoropropane.

12. The compositions of claim 8, wherein said at least one inert propellant comprises at least one component selected from the group consisting of hydrofluorocarbons,  
10 hydrofluoroethers, perfluorocarbons, nitrogen, argon, and air.

13. The compositions of claim 1, further comprising moisture, wherein said moisture is sufficient to provide a relative humidity of approximately 30% to 80%.  
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14. A method for sterilizing articles comprising the steps of:

a) obtaining a composition comprising ethylene oxide and at least one flammability suppressant, said flammability  
20 suppressant containing trifluoromethyl iodide and carbon dioxide; and

b) exposing the articles to said composition.

15. A method of making a composition of matter comprising the step of:

a) blending ethylene oxide, carbon dioxide, and trifluoromethyl iodide, wherein the gas volume percentage of ethylene oxide comprises between about 9% and about 26%, the gas volume percentage of carbon dioxide comprises between about 50% and about 90.9%, and the gas volume percentage of trifluoromethyl iodide comprises between about 0.1% and about 24%.

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16. The method of claim 15, further comprising the step of:

b) adding at least one additive.

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17. The method of claim 16, wherein said at least one additive is selected from the group consisting of hydrofluorocarbons, hydrofluoroethers, perfluorocarbons nitrogen, and air.

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18. The method of claim 17, wherein said hydrofluorocarbons are selected from the group consisting of trifluoromethane, pentafluoroethane, 1,1,1,2-

tetrafluoroethane, 1,1,1,3,3-pentafluoropropane, and 2H-heptafluoropropane.

19. Compositions comprising at least one flammability  
5 suppressant, wherein said flammability suppressant further  
comprises at least one physically-acting combustion  
suppressant and at least one chemically-acting combustion  
suppressant.

10 20. The compositions of claim 19, wherein said at least  
one chemically-acting combustion suppressant comprises  
trifluoromethyl iodide.

21. The compositions of claim 19, wherein said at least  
15 one physically-acting combustion suppressant comprises carbon  
dioxide.